

October 30, 2013

## First Round: 2010 1-hour SO<sub>2</sub> NAAQS Nonattainment Area Modeling

### Summary

Staff has completed preliminary modeling for Missouri's two SO<sub>2</sub> nonattainment areas (NAA): Jefferson County and Jackson County. Based on the results from these models runs, staff has identified 12 sources with a contributing impact on the nonattainment area. It should be noted that two of the 12 sources are located in Kansas.

An individual email will be sent to each facility in Table 1 and Table 2 as an initial contact. The email will contain source information specific to each facility and will request confirmation of the information from the facility.

Table 1: Summary of facilities in the Jefferson County NAA with maximum impacts greater than the established background (based on actual emissions from 2012 EIQ)

Facility	Max Impact (µg/m <sup>3</sup> )	Anticipated Applicable Federal Regulations
Ameren Meramec*	298.99	MATS
Ameren Rush Island*	255.17	MATS
River Cement **	108.5	Undetermined
Ameren Labadie*	67.057	MATS
Mississippi Lime	47.9	Boiler MACT
St. Gobain Containers	33.18	Boiler MACT
<i>Established Background</i>		23.58 µg/m <sup>3</sup>
<i>2010 1-hour SO<sub>2</sub> NAAQS (75 ppb)</i>		<i>Equivalent to 196.5 µg/m<sup>3</sup></i>

\* Continuous Emissions Monitoring data available for only certain individual emission units.

\*\* Currently being reviewed for source parameter accuracy.

Table 2: Summary of facilities in the Jackson County NAA with maximum impacts greater than the established background (based on actual emissions from 2012 EIQ)

Facility	Max Impact (µg/m <sup>3</sup> )	Anticipated Applicable Federal Regulations
Veolia Energy	392.97	Boiler MACT
KCPL Hawthorn*	75.47	MATS
IPL Blue Valley*	69.44	MATS
BPU Quindaro (KS)*	56.67	MATS
BPU Nearman (KS)*	36.17	MATS
KCPL Sibley*	35.24	MATS
<i>Established Background</i>		34.06 µg/m <sup>3</sup>
<i>2010 1-hour SO<sub>2</sub> NAAQS (75 ppb)</i>		<i>Equivalent to 196.5 µg/m<sup>3</sup></i>

\* Continuous Emissions Monitoring data available for only certain individual emission units.

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### Summary Details

A modeling protocol, describing the meteorological data used in the model and outlining the methodology used in our modeling approach, was prepared by staff and submitted to the EPA on Oct. 23, 2013 for review. AERMOD is the dispersion model used to determine compliance with the NAAQS. For this round of attainment demonstrations, compliance with the NAAQS was evaluated only in the nonattainment areas. As such, the receptor grid is contained exclusively within the NAA boundaries.

The impact of sources within the nonattainment area and within 50 km of the nonattainment area was evaluated. A buffered approach was developed to determine the source inventory for each nonattainment area. This approach (Table 3) used proximity to the nonattainment area, actual reported emissions, and calculated potential emissions as indicators for inclusion in the model inventory.

Table 3: Summary of buffered approach

Buffer level	Sources for inclusion in the inventory
Nonattainment Area	All SO <sub>2</sub> sources
< 10 km from the NAA boundary	Sources with a PTE > 100 tpy
between 10 & 50 km from the NAA boundary	Sources with actual emissions > 100 tpy

### Initial Base Run

In the initial run, sources were modeled using their annual reported emissions and release parameters, as reported in MOEIS. For Electric Generating Units (EGUs) that are required to use a Continuous Emissions Monitoring System (CEMS) and report those to the EPA's Clean Air Markets Division (CAMD) database, the CEMS data was used in lieu of actual reported MOEIS data. The 95<sup>th</sup> percentile of total emissions was chosen as the hourly emission rate in the model to exclude extreme anomalies that do not necessarily represent maximum emissions associated with peak loads at worst-case operating conditions.

A representative background concentration value [see value in Tables 1 & 2] was established for each area based on data obtained from area monitors. This background value accounts for any natural emissions as well as sources not explicitly included in the model inventory.

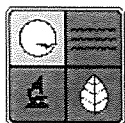
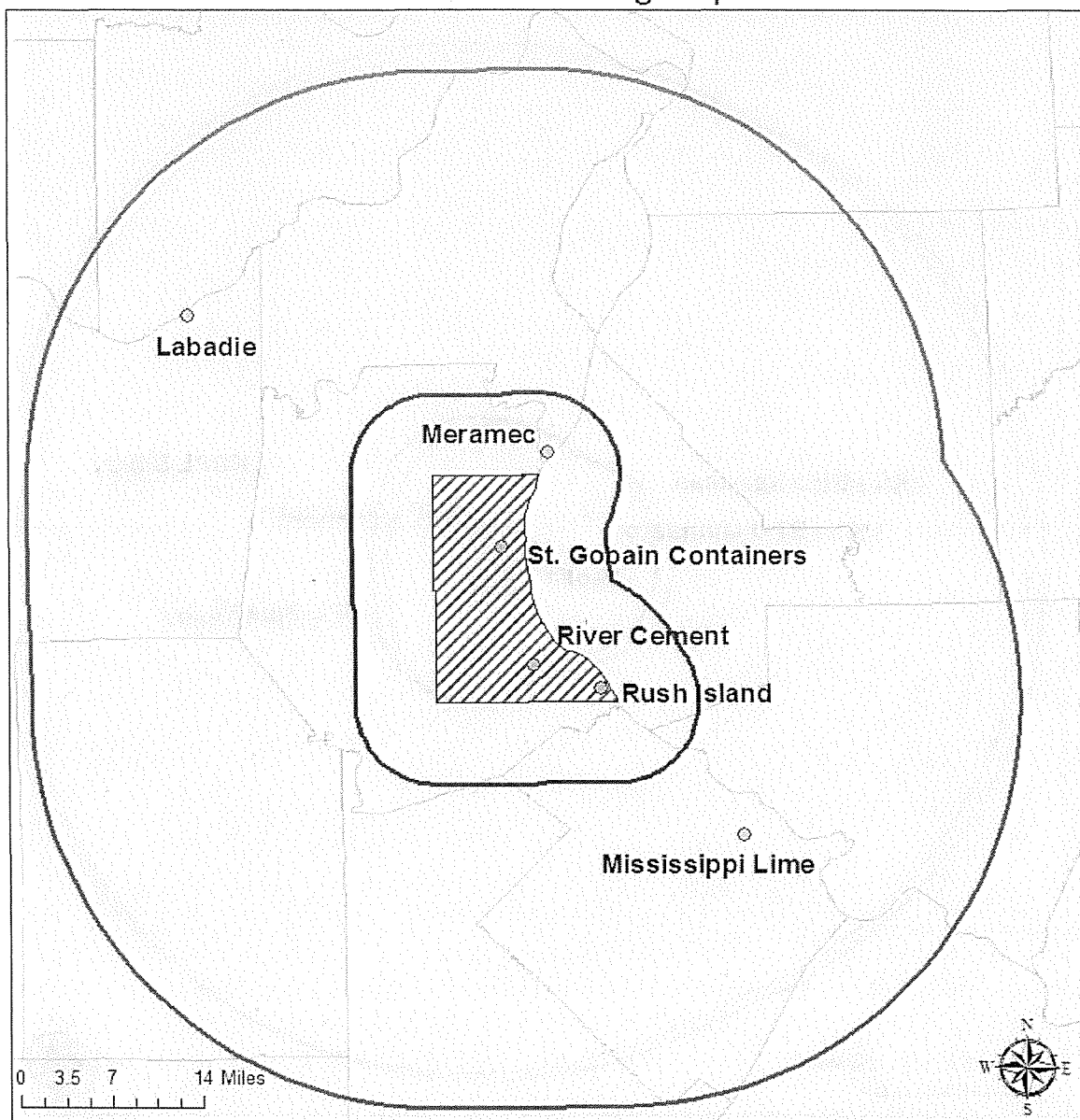
Results from the initial model run were analyzed to determine which facilities had a contributing impact within the nonattainment area. For this initial analysis, contributing impact is defined as having an impact greater than the established background concentration.

### Future Considerations

Federal regulations such as the Mercury and Air Toxics Standards (MATS) MACT and the Boiler MACT may provide SO<sub>2</sub> emission reductions that could be applied in the attainment demonstrations. The MATS MACT includes an alternative SO<sub>2</sub> limit in place of the Hydrogen Chloride (HCl) limits for qualifying EGUs. The Boiler MACT allows the use of SO<sub>2</sub> CEMS for demonstrating compliance with HCl emission limits, with special conditions. Co-benefits for potential SO<sub>2</sub> emission reductions associated with controlling Hazardous Air Pollutant (HAP) emissions, specifically acid gas HAPs, are expected from units subject to the Boiler MACT. Certain provisions of both the MATS [40 CFR 63 Subpart 5U] and the Boiler MACT [40 CFR 63 Subpart 5D] are currently being reconsidered or proposed for amendment.

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## Jefferson County NAA with Buffers and Initial Model Run Contributing Impact Sources



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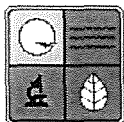
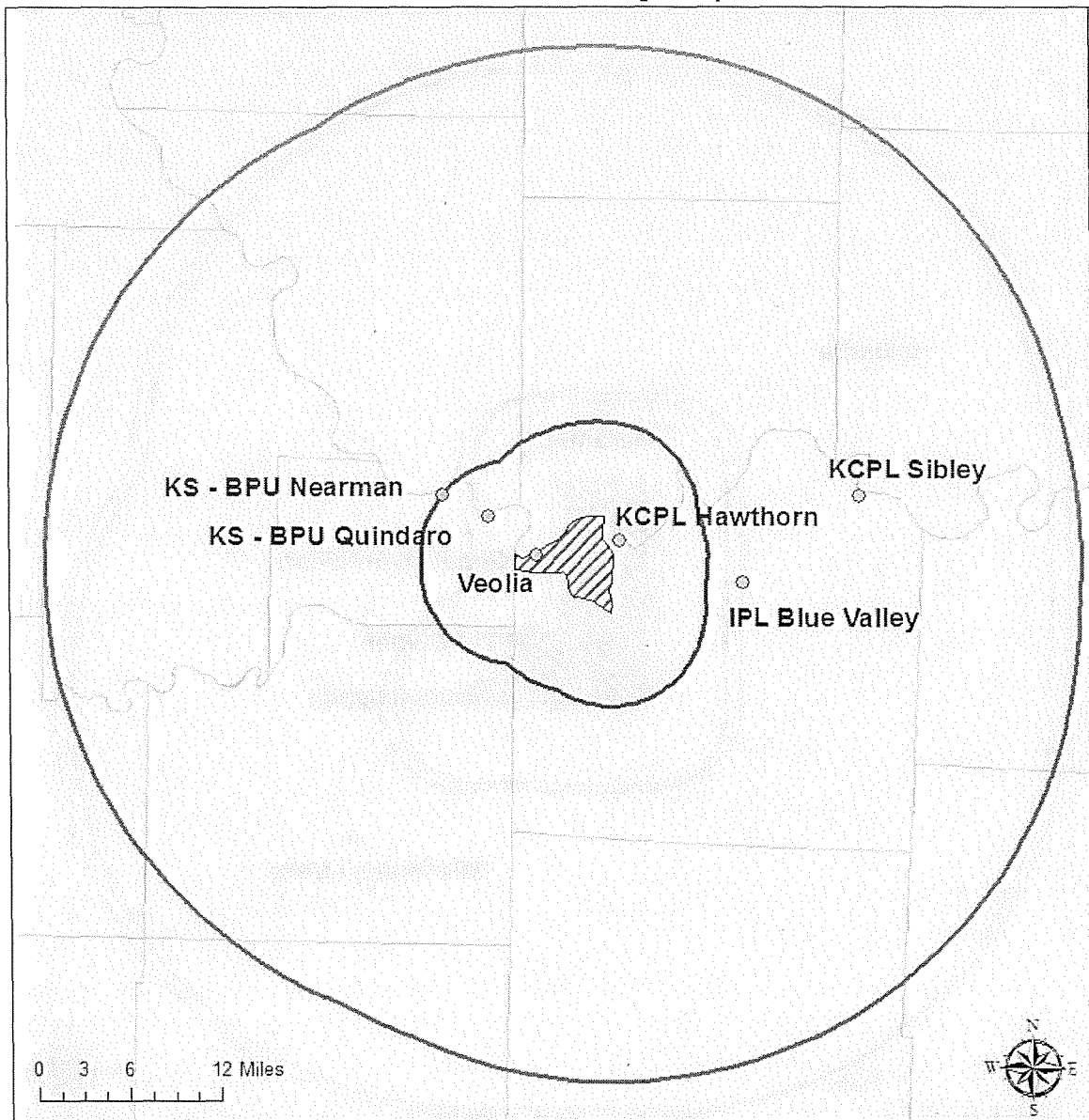
Division of Environmental Quality  
Air Pollution Control Program  
Prepared: October 29, 2013

### Legend

- Impacting Sources (As shown in List)
- Jefferson 50 km Buffer
- Jefferson 10 km Buffer
- ▨ Jefferson County NAA

October 30, 2013

## Jackson County NAA with Buffers and Initial Model Run Contributing Impact Sources



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Division of Environmental Quality  
Air Pollution Control Program  
Prepared: October 29, 2013

### Legend

- Impacting Sources (As shown in List)
- Jackson 50 km Buffer
- Jackson 10 km Buffer
- ▨ Jackson County NAA